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Código de acceso: 3799627#

# SAN JOAQUIN VALLEY - DISADVANTAGED COMMUNITIES

## Data Gathering Plan
## Final Results

CALMAC Study ID: CPU0342.05

August 30, 2021

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# INTRODUCTIONS & AGENDA

# Agenda

- Introductions (5 min)
- Remarks from Commissioner Guzman Aceves (10 min)
- Study Background (5 min)
- Methodology (5 min)
- Study Findings (65 min)
- Q&A (30 min)

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# Introductions: Working Group

- *Lynn Spencer*

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- *Charles Ward*

  Regulatory Analyst, Energy Division, CPUC
- *Abigail Solis – Co-Chair*

  Sustainable Energy Solutions, Manager, Self-Help Enterprises
- *Adam Buchholz – Co-Chair*

  Regulatory Analyst, Public Advocates Office, CPUC
- *Shelly Lyser*

  Program and Project Supervisor, Public Advocates Office, CPUC

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# Introductions: Research Team

- *Tami Buhr*

  Vice President, Opinion Dynamics
- *Melanie Munroe*

  Director, Opinion Dynamics
- *Jordan Folks*

  Principal Consultant, Opinion Dynamics
- *Marian Goebes*

  Associate Technical Director, TRC
- *Rupam Singla*

  Technical Project Manager, TRC
- *Jennifer Dawson*

  Senior Director of Marketing Research, Fresno Facility Co-Director, Nichols Research

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# STUDY BACKGROUND

# Procedural Background

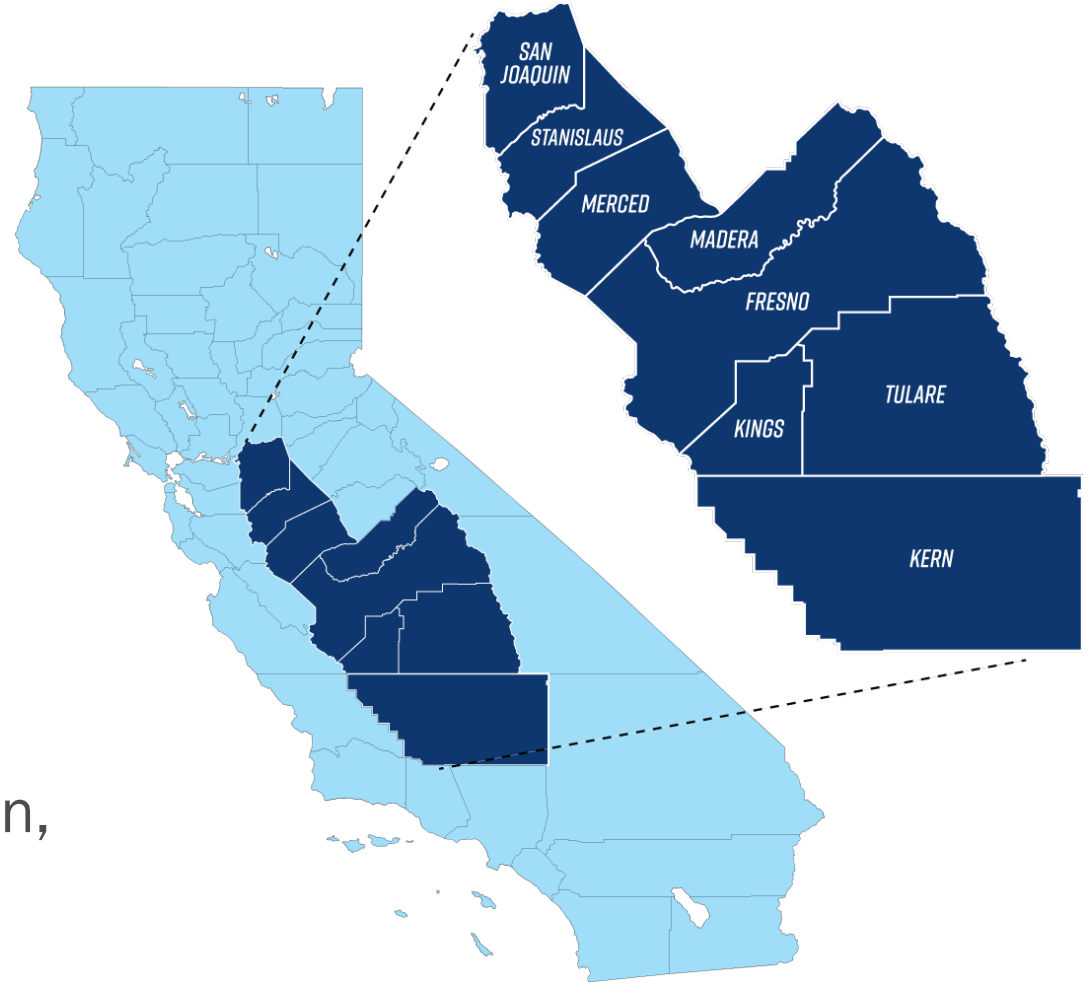
- AB 2672, Section 783.5 (September 2014), seeks to increase access to affordable energy for residents of disadvantaged communities (DAC) in the San Joaquin Valley
- Focused on low-income households that lack access to natural gas and rely on electricity, propane, or wood-burning to meet energy needs

# Overarching Data Gathering Plan Objective & Target Population

- Collect information needed to establish baseline conditions in the identified communities and to support an analysis of the economic feasibility of extending affordable energy options to these communities, in particular to dwellings that currently lack access to natural gas

  -- D.18-08-019, August 13, 2018

- 179 communities identified in “San Joaquin Valley” including the counties of Fresno, Kern, Kings, Madera, Merced, San Joaquin, Stanislaus, and Tulare.



# Definition of Disadvantaged Communities

- At least 25 percent of the residential households with electrical service are enrolled in the California Alternate Rates for Energy (CARE) program pursuant to Section 739.1;
- Has a population greater than 100 persons within its geographic boundaries as identified by the most recent survey;
- Has geographic boundaries no further than seven miles from the nearest natural gas pipeline operated by a gas corporation; and
- “San Joaquin Valley” means the counties of Fresno, Kern, Kings, Madera, Merced, San Joaquin, Stanislaus, and Tulare.
- 179 Disadvantaged Communities identified

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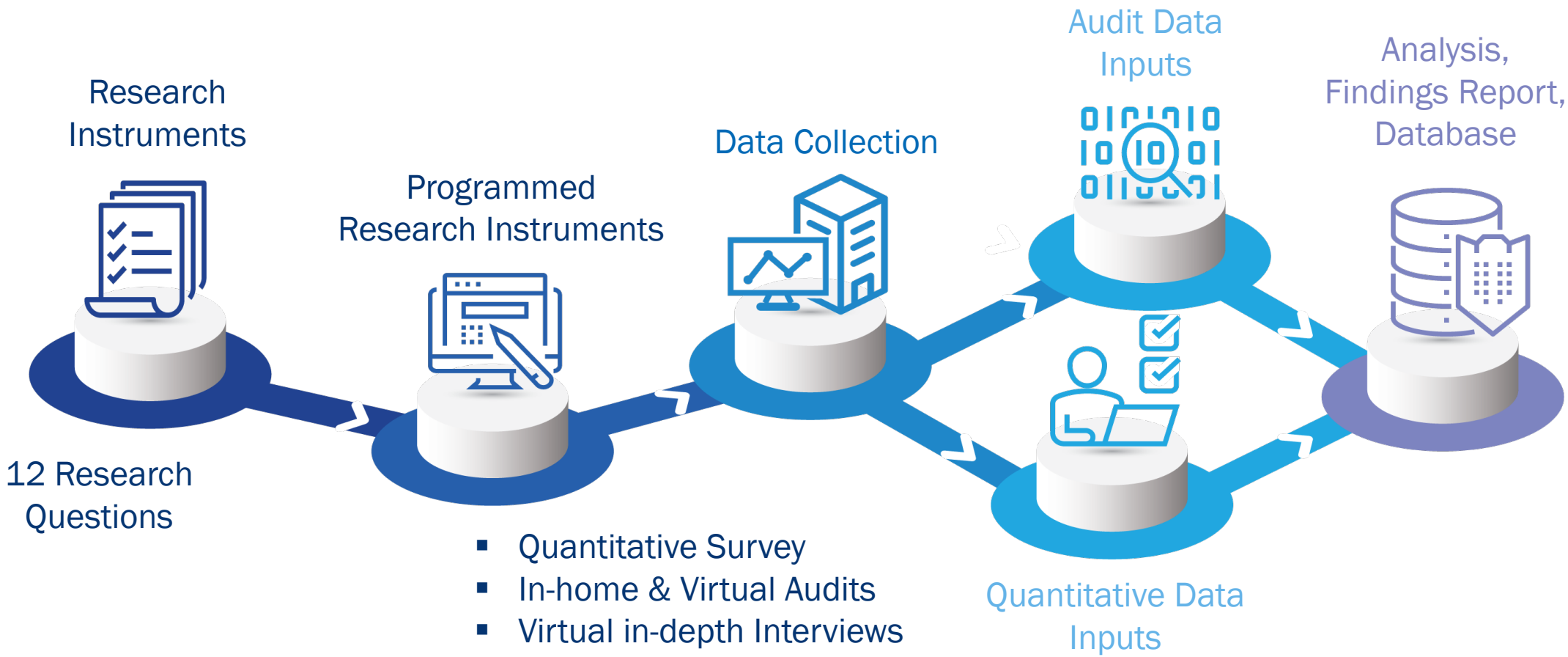
# METHODOLOGY

# Sampling Design

- **Data Gathering's sample plan focused on non-natural gas households and their comparison to households with natural gas access**
- **Stratified sample targets:**
  - Natural Gas Access: Non-Natural Gas, Natural Gas
  - Community Size: Small, Medium, and Large
    - *Small (Less than 1,000 Households)*
    - *Medium (1,000 to 10,000 Households)*
    - *Large (More than 10,000 Households)*
  - Audits included Housing Type targets: Single family detached, Single family attached, and Mobile homes
- **Nested sample design**
  - Audit households are sampled from survey completes
  - Allows for survey adjustments of technical information

# Data Collection

**108 Data Inputs**



# Outreach and COVID-19 Impacted Activities

## Outreach:

- Opinion Dynamics invited SJV customers to participate in this research through multiple modes: mail, email, and telephone.
- Opinion Dynamics coordinated with Self-Help Enterprises to expand outreach to the smallest SJV communities and increase response rates through community events, door-to-door canvasing, telephone outreach, and fliers.

## COVID-19 Impacted Activities:

- The pandemic shutdown activities in California in the middle of survey data collection.
- COVID-19 impacted the ability for in-person outreach and in-person data collection.
- Data collection was paused to determine the impact of California's "stay home" order.
- Survey questions received minor tweaks to respond to the pandemic.
- Audits and interviews shifted to virtual data collection.

# Weighting & Statistical Significance Testing

- **Sampling weights** are applied to study results to ensure that data elements are representative of the SJV population.
- Three key comparison groups:
  - Households with natural gas access versus no natural gas access
  - Small community, no natural gas versus medium/large community, no natural gas
  - Owner, no natural gas versus renter, no natural gas
- **Statistical significance testing** is performed for each comparison group. Differences at a 90% confidence level between each comparison group are noted for each figure/table.

# Alternative Fuels & CARE Eligibility

- Any reference in this presentation to **alternative fuels** refers to any fuel sources excluding electricity or natural gas that customers use for space heating, water heating, cooking, or laundry.
- **CARE Eligibility** comparison was added to the final findings report. The addition of this subgroup to the analysis was in response to CPUC Workshop questions regarding differences by income level and a desire to see how customers with lower income in the SJV compare to those who do not have lower income.
  - CARE eligibility was based on self-reported income and number of residents. Households were mapped to CARE eligibility rules. In addition, customers flagged as CARE in IOU records were flagged as CARE eligible regardless of self-reported income and number of residents.
- NOTE: Results have been updated since the CPUC Workshop (5/10) to reflect additional data cleaning, QA/QC, and analysis since the Workshop.

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# STUDY FINDINGS

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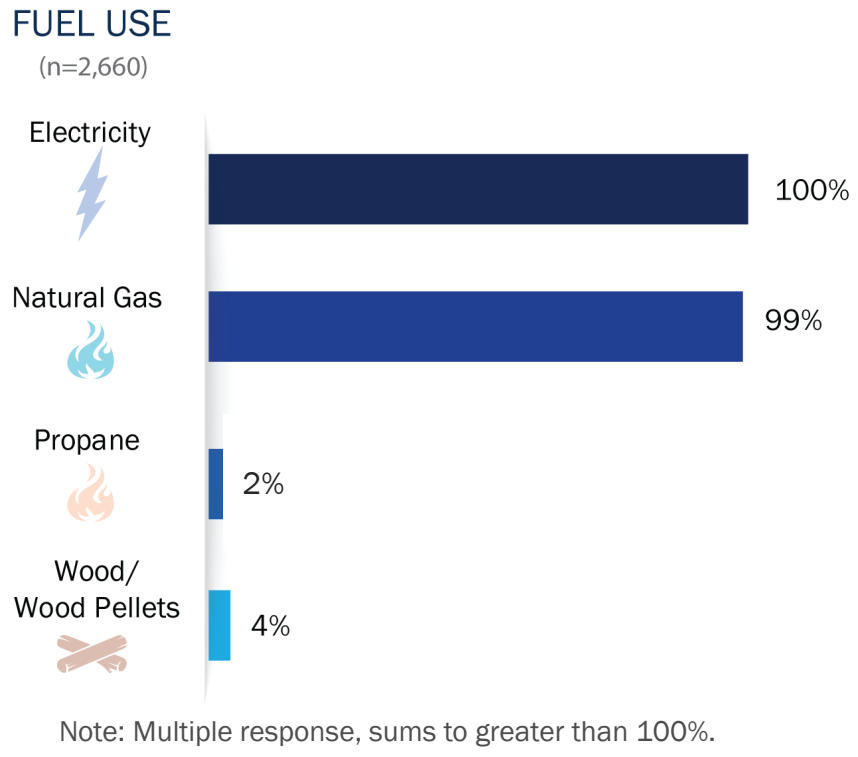
# FUEL USE

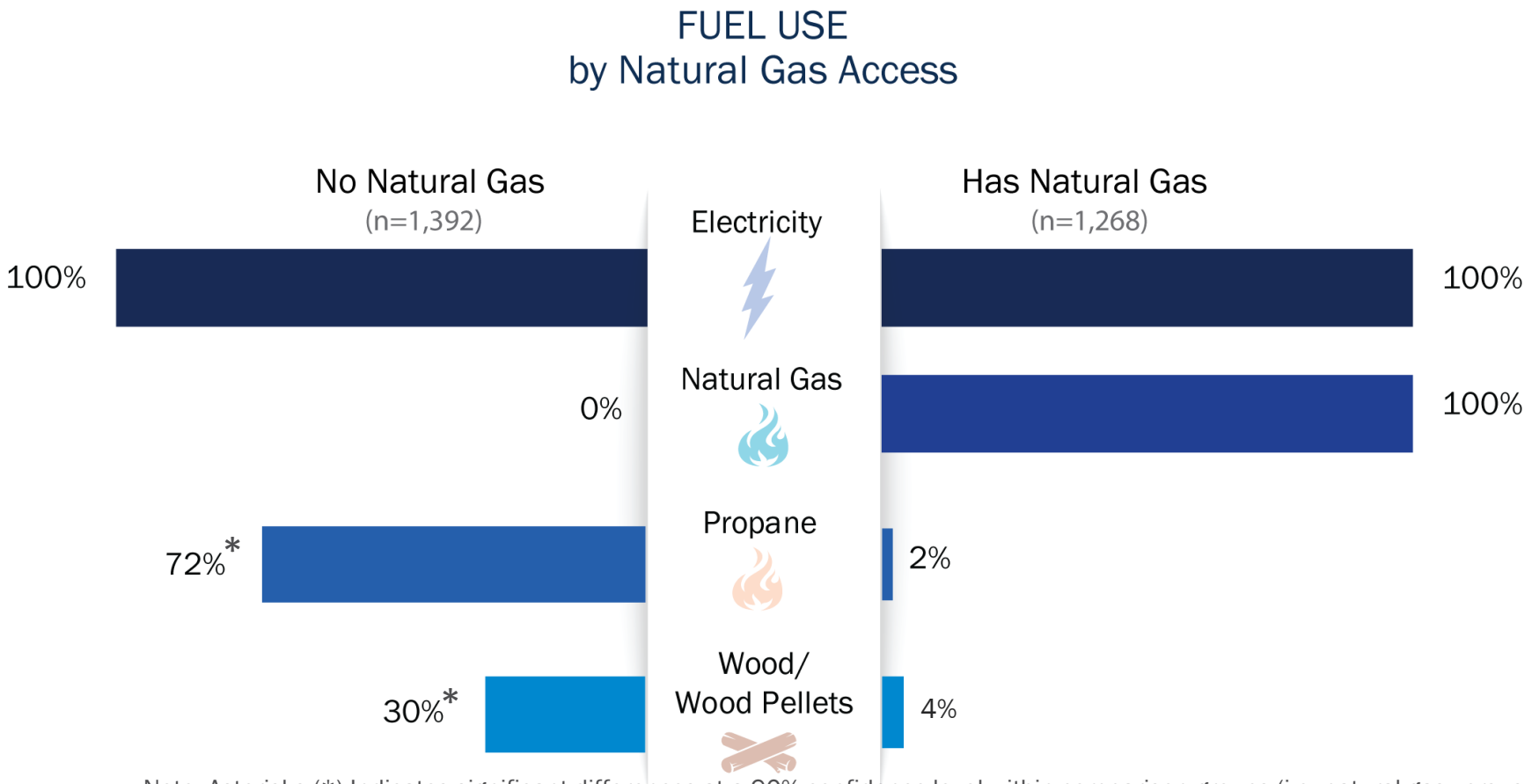
# Overall Fuel Use in the SJV Data Gathering Communities

- The focus of this study is on the SJV DAC households (1%) that lack access to natural gas. The portion of our study population without access to natural gas is estimated to be approximately 8,250 households.
- These households without access to natural gas rely more heavily on propane, wood, and wood pellets.
- Propane use and wood/wood pellet use reported in this presentation excludes households that do not use these fuels regularly (e.g. occasional BBQ use).




Note: Multiple response, sums to greater than 100%.

# Fuel Use by Natural Gas Access



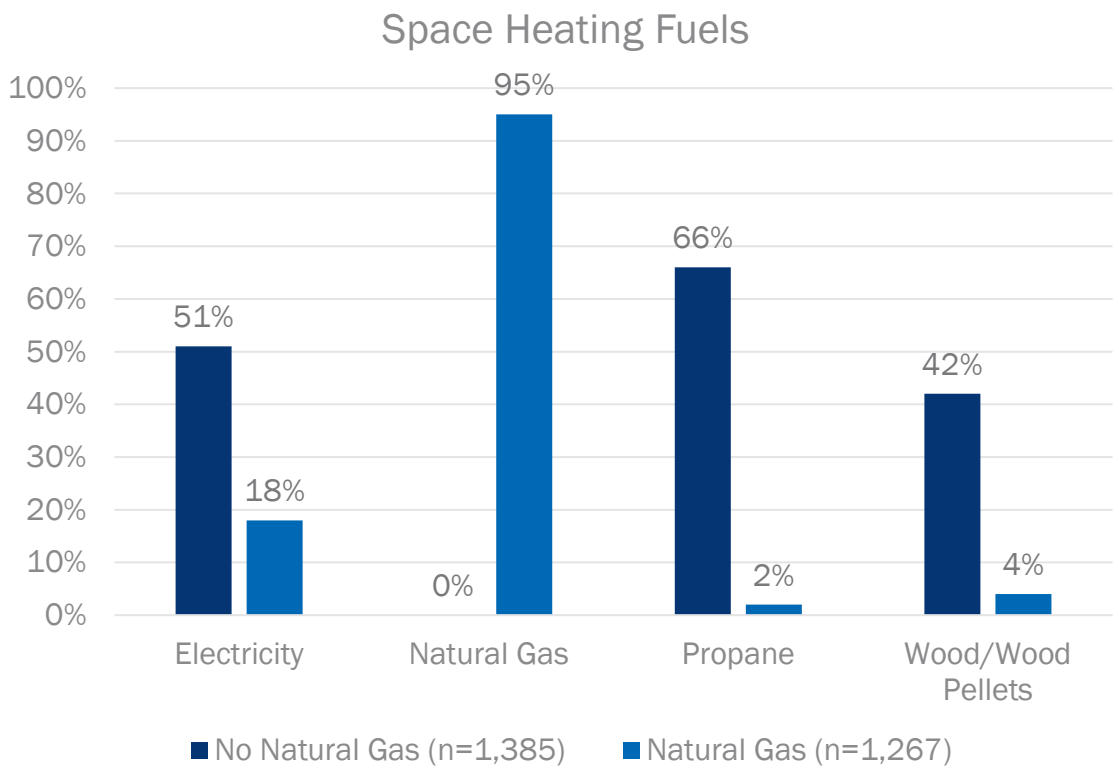

Note: Asterisks (*) Indicates significant differences at a 90% confidence level within comparison groups (i.e. natural gas versus non-natural gas)

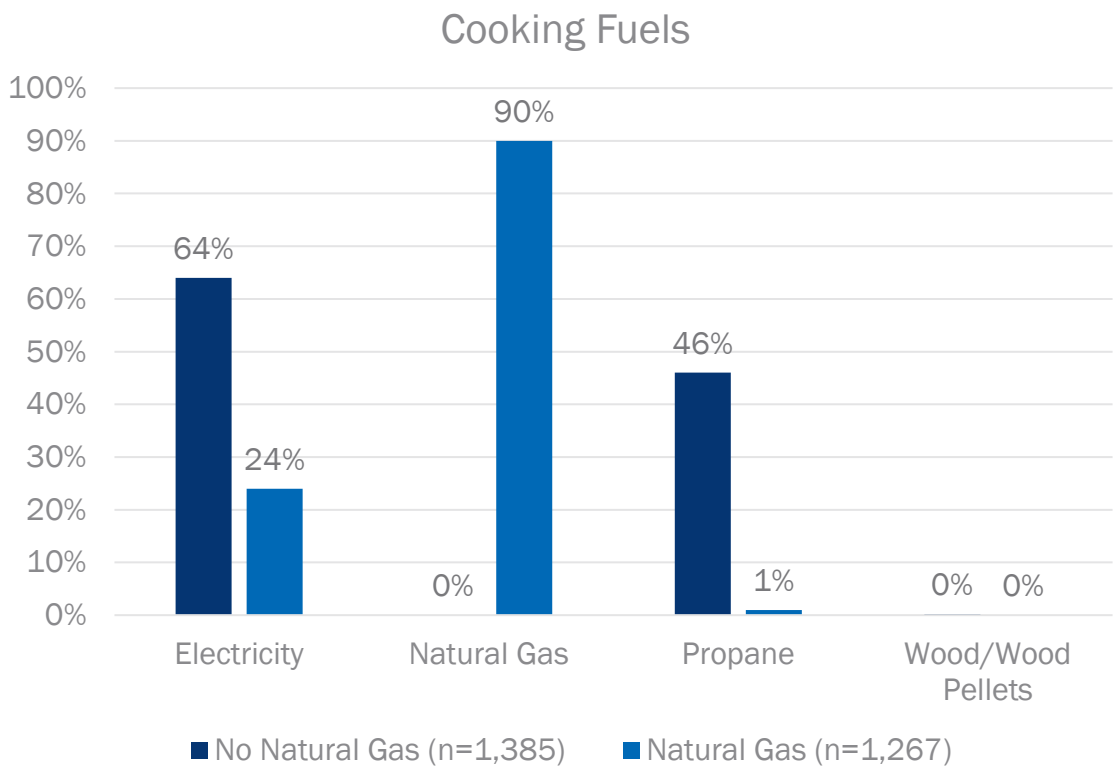
Multiple response, sums to greater than 100%.

# Current Fuel Use

- Research Question:
  - How do residents currently fuel their heating, water heating, clothes drying, and cooking needs?
- Study Findings:
  - The vast majority of SJV households use natural gas for space (95%) and water heating (96%), cooking (90%), and clothes drying (70%).
  - Many SJV households use multiple appliances and fuels for space heating and cooking, 18% also use electricity for space heating and 24% use electricity for cooking.
  - While nearly two-thirds of households without access to natural gas (72%) use propane for at least one major end-use, propane is not a 1:1 substitute for natural gas. Customers without natural gas are most likely to use propane for space heating (66%), followed by water heating (60%), cooking (46%), and clothes drying (22%). Although a sizable percentage of customers without natural gas use wood for space heating (42%), few use it for cooking (<1%). One-quarter of households without natural gas only use electricity.

# Fuel Use for Space Heating & Cooking



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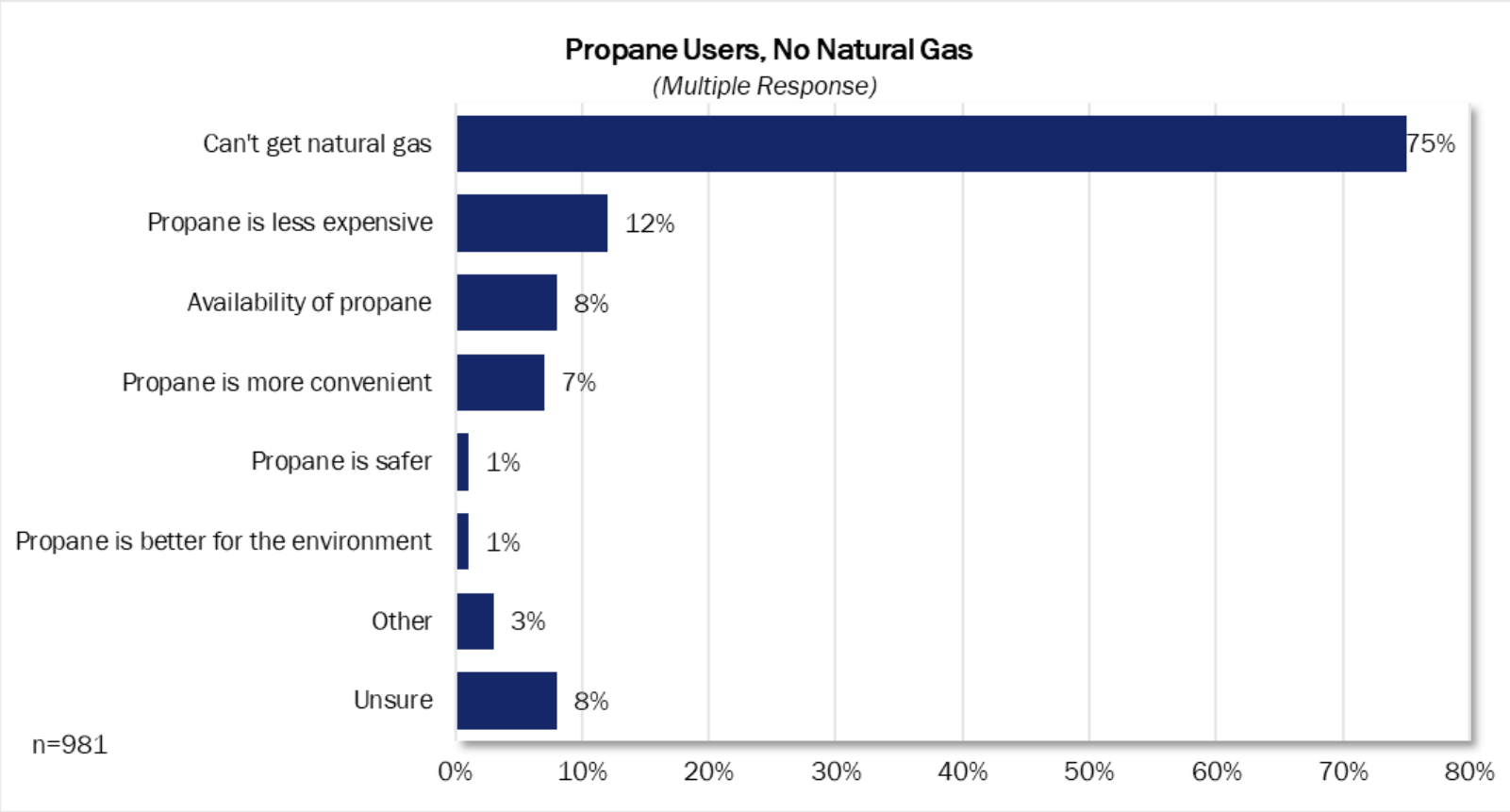
# DRIVERS OF CURRENT FUEL USE

# Drivers for Current Fuel Use

- Research Questions:
  - Is the reason for their current fuel access to other energy sources and if so, what are the constraints?
  - Is their current fuel a preference, and if so, why the preference?
- Study Findings:
  - The main reason SJV DAC customers use alternative fuels is because they lack access to natural gas.
  - Few customers prefer to use propane. When asked why they use propane, the most common responses were associated with fuel availability. Three-quarters of respondents (75%) cited their lack of access to natural gas, 8% said they used propane because it was available, and 7% said it was convenient. Few respondents gave a response that suggests propane is a preference (12% said propane is less expensive).

# Reasons for Using Propane

- Why do you use propane as a fuel source in your home instead of electricity or natural gas?




Multiple response allowed, may sum to greater than 100%.

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# ENERGY COSTS & ENERGY BURDEN

# Energy Costs



- Energy usage and billing data was provided by PG&E, SCE, and SoCalGas for all households who participated in this research for the purposes of calculating household energy costs in 2019.
- 2019 is the timeframe used for this study because data collection began in early 2020.
- Propane, wood, wood pellet, and diesel fuel costs were self-reported by survey respondents.

# Energy Costs

- Research Questions:
  - What are the total energy costs including the bills for alternate fuel used by customers?
  - How do these costs compare to those who have access to natural gas and electricity?
- Study Findings:
  - Customers who do not have access to natural gas pay more to fuel their homes than customers with natural gas. The annual total energy costs of customers without access to natural gas are 38% higher than customers with access to natural gas ($2,312 vs. $1,671).
  - Customers without access to natural gas rely on a variety of fuels to meet their needs. All electric customers have the lowest total energy costs on average ($1,687) and are comparable to the total costs of customers with natural gas. Customers whose only alternative fuel is wood have the next highest total fuel costs ($2,029). Propane use increases costs. Customers whose only alternative fuel is propane pay an average of $2,597 in annual energy costs. Customers who use both propane and wood have the highest total energy costs ($2,919).
  - Study results confirm that propane is a much more expensive fuel than natural gas. Households that do not have access to natural gas and use propane spent nearly three times as much on average for propane than households with natural gas spent on natural gas ($1,177 vs. $403).

# 2019 Energy Costs by Alternative Fuel Use Categories

| | n* | Total Costs | Electricity Costs | Natural Gas Costs | Propane Costs | Wood Costs |
|---|---|---|---|---|---|---|
| **Fuel Use** | | | | | | |
| Natural Gas (a) | 736-1209 | $1,671 | $1,303 | $402 | N/A | N/A |
| Non-Natural Gas (b) | 194-1269 | $2,312[a] | $1,496[a] | N/A | $1,177 | $379 |
| --All Electric (c) | 268-268 | $1,687 | $1,687[adf] | N/A | N/A | N/A |
| --Propane Only† (d) | 550-677 | $2,597[ace] | $1,432[a] | N/A | $1,222[f] | N/A |
| --Wood/Wood Pellet Only† (e) | 47-87 | $2,029 | $1,545 | N/A | N/A | $323 |
| --Both Propane and Wood/Wood Pellets (f) | 128-237 | $2,919[acde] | $1,375 | N/A | $1,049 | $395 |

a/b/c/d/e/f Indicates significant differences at a 90% confidence level between the following tests:

ab,acdef.

* n values range due to several factors: incidence rates of the fuels used, missing cost data, and removing outliers.

†Propane only and wood only customers use only one alternative fuel. Respondents may also use electricity for a major energy end use.

# Energy Burden

- Energy burden is a measure of customer hardship due to energy costs.
- The standard, basic calculation of "customer energy burden" is the sum of each customer's energy bills during a given year divided by their household income for that year, notated as:

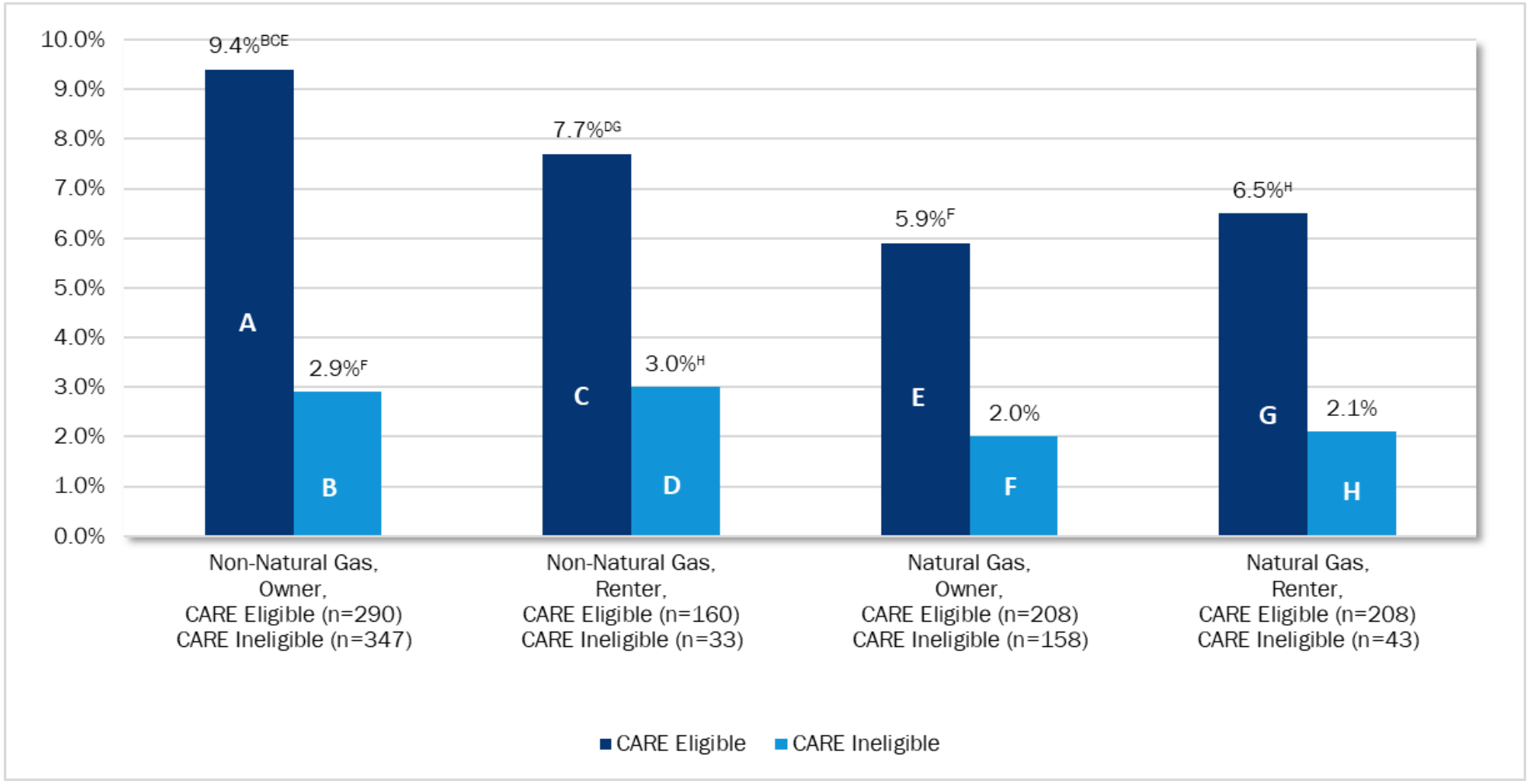
$$\text{Energy Burden} = \frac{\text{Annual Sum of Energy Costs}}{\text{Annual Household Income}}$$

- The customers' energy burden results are then summed and divided by the total number of customers to calculate the overall average energy burden metric.

# Energy Burden

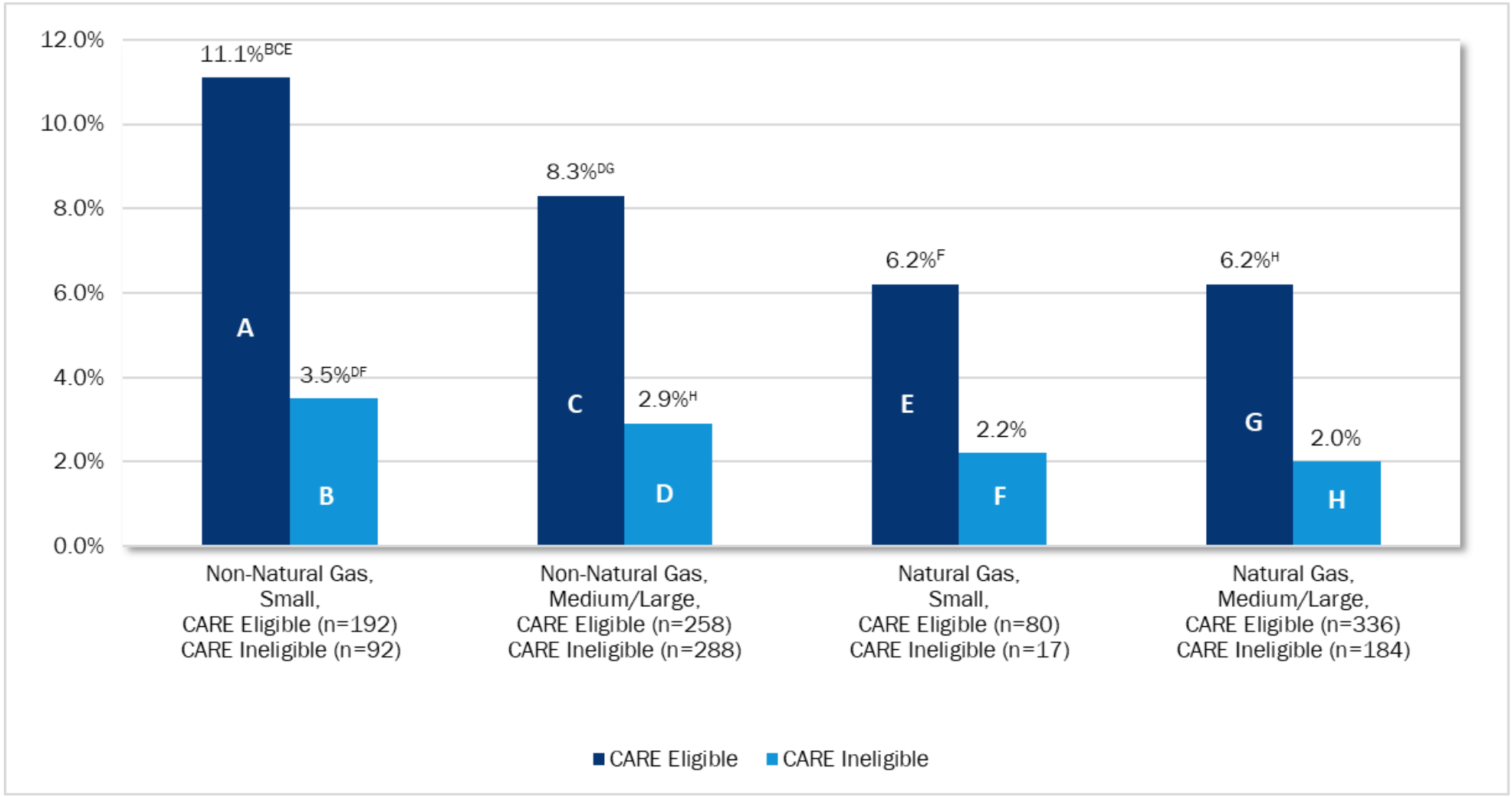
- Research Questions:
  --How does usage and burden differ from comparable households in these communities that do not rely on these alternate fuels?
  --What are key issues or drivers of the burden or hardship customers with alternative fuels (i.e., do not have natural gas or use only electricity) experience?
- Study Findings:
  - Energy burden is a function of household income and energy costs. The average customer who lacks access to natural gas pays 38% more in annual energy costs than customers with natural gas. Customers without natural gas have proportionately higher energy burdens (5.9% vs. 4.5%). Annual household incomes do not differ by natural gas access so the difference in energy burden is driven almost entirely by higher energy costs.
  - However, the increased burden resulting from lack of access to affordable energy is not shared equally across all customers. Lack of access to natural gas has a disproportionately greater impact on lower income customers (indicated by CARE eligibility) than non-low income customers. CARE eligible customers who lack access to natural gas and live in small communities, mobile homes, or own their homes have particularly high energy burdens (11.1%, 10.1%, and 9.4% respectively). CARE eligible owners have higher energy burdens than renters because they are more likely to use expensive alternative fuels whereas renters are more likely to be all-electric.

# Energy Burden: Natural Gas Access, Home Ownership, and CARE Eligibility



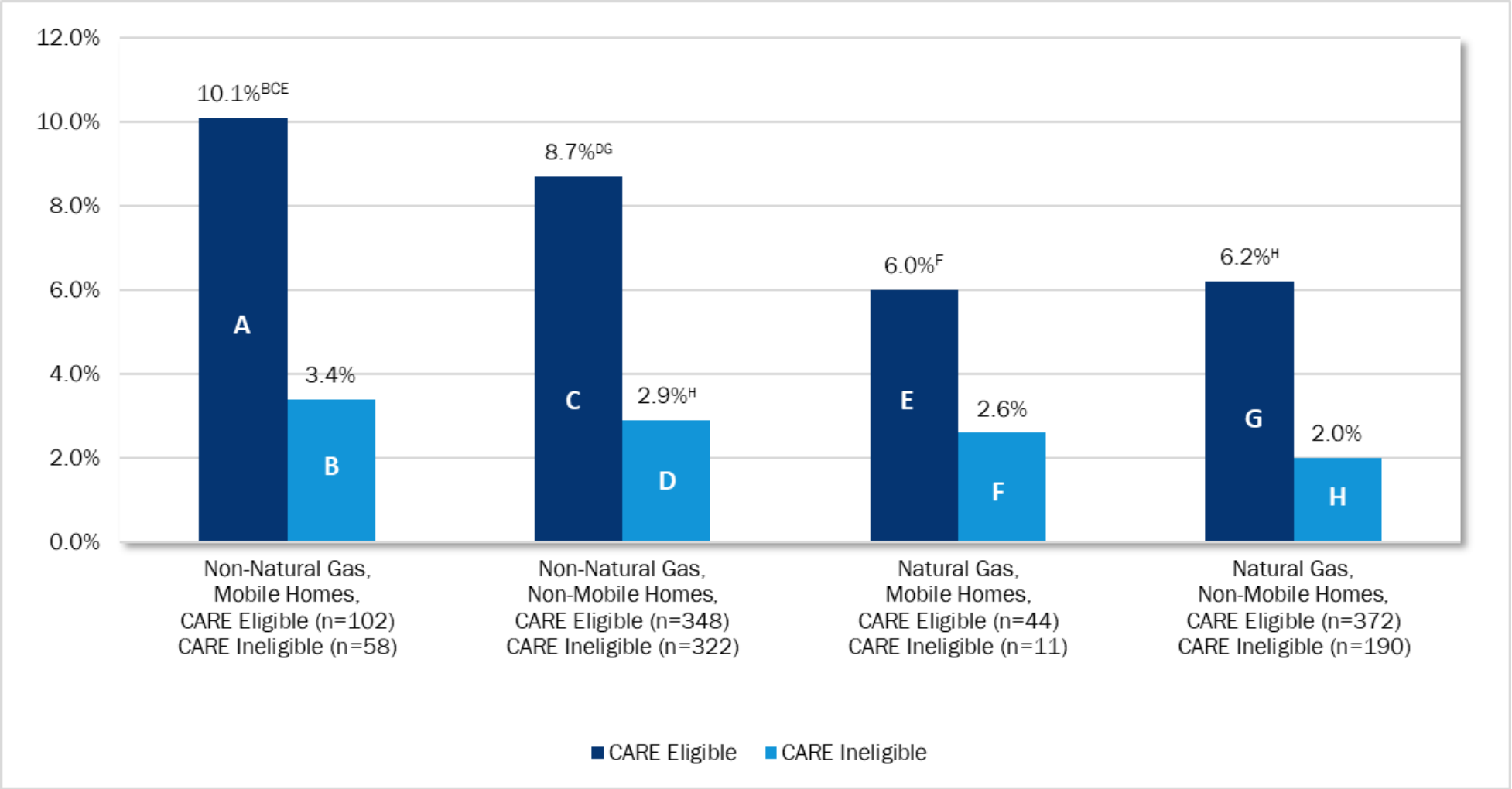

Note: A/B/C/D/E/F/G/H Indicates significant differences at a 90% confidence level between the following tests: AB, CD, EF, GH, AC, BD, EG, FH, AE, BF, CG, DH

# Energy Burden: Natural Gas Access, Community Size, and CARE Eligibility




Note: A/B/C/D/E/F/G/H Indicates significant differences at a 90% confidence level between the following tests: AB, CD, EF, GH, AC, BD, EG, FH, AE, BF, CG, DH

# Energy Burden: Natural Gas Access, Housing Type, and CARE Eligibility




Note: A/B/C/D/E/F/G/H Indicates significant differences at a 90% confidence level between the following tests: AB, CD, EF, GH, AC, BD, EG, FH, AE, BF, CG, DH

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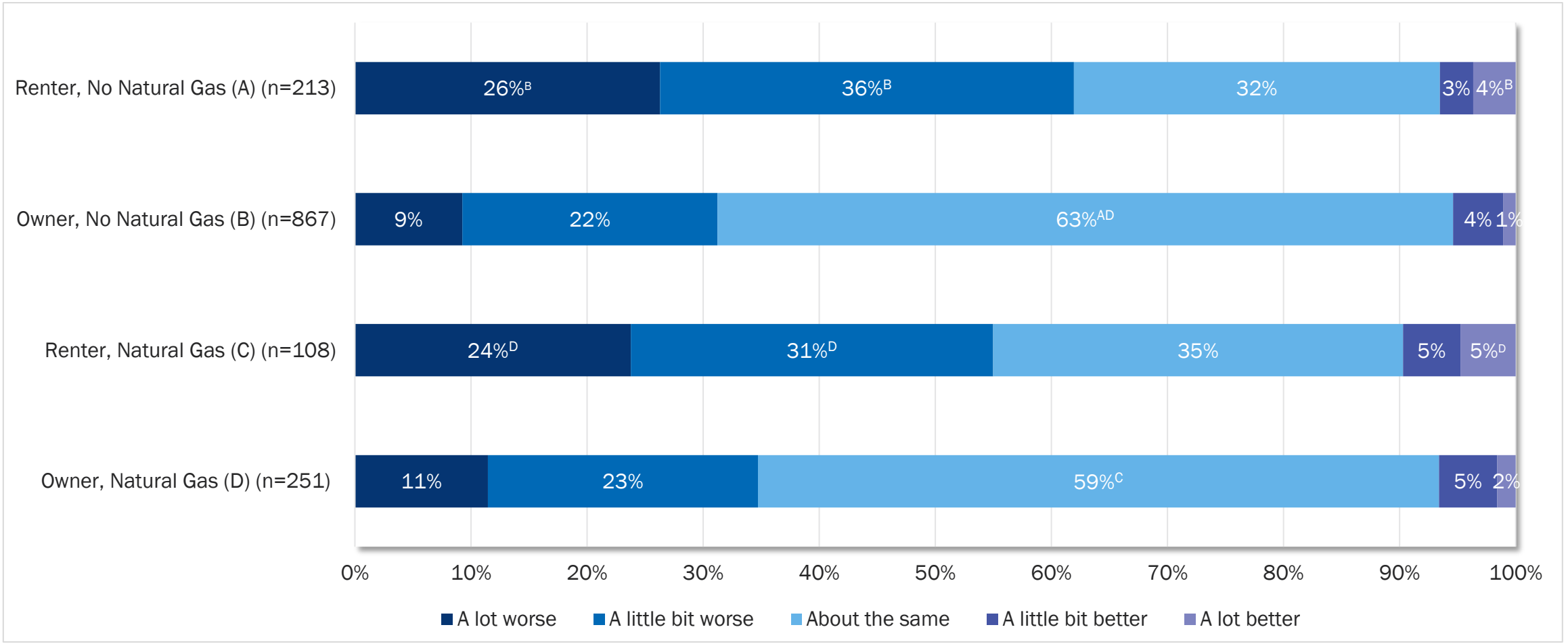
# COVID-19 ADDITIONS

# COVID-19 Impacts

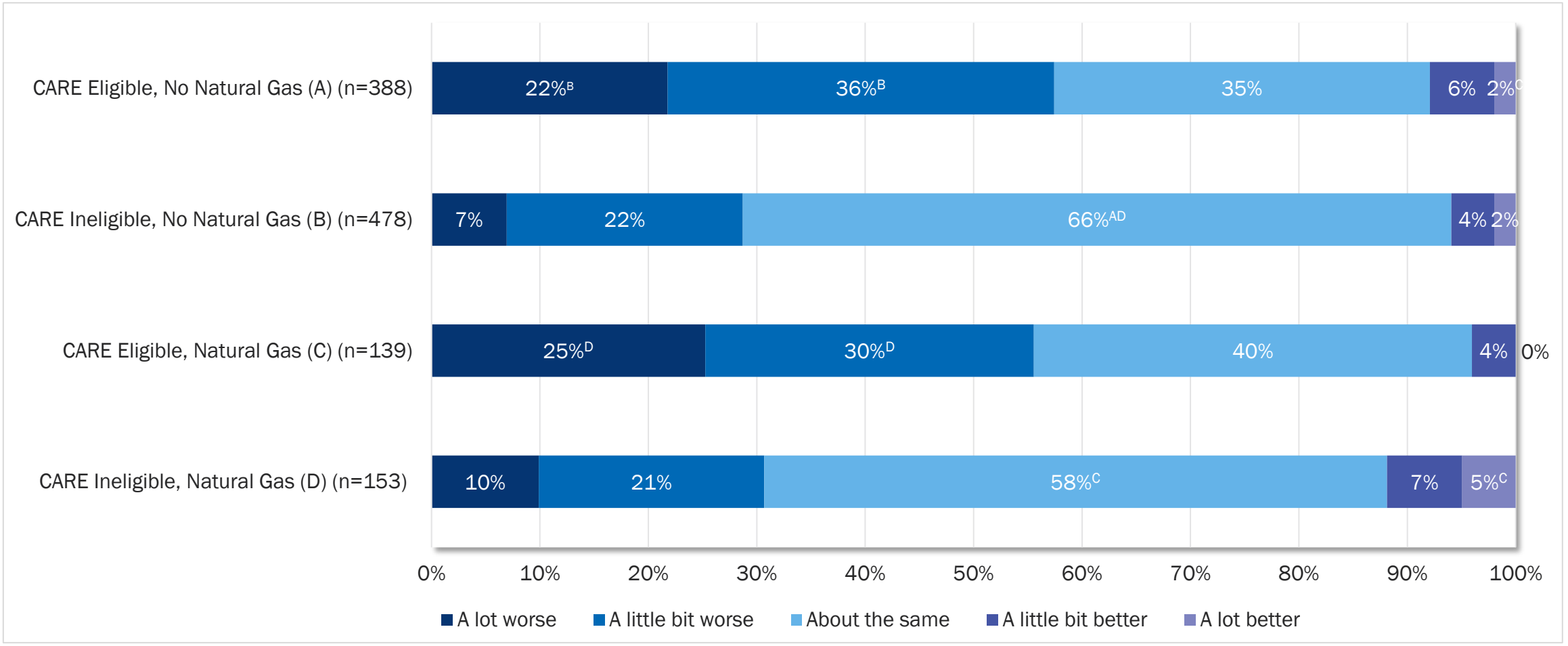
- Lower income (CARE eligible) households and renters have had more negative impacts on their financial situations than owners and CARE ineligible households. This difference is demonstrated by their response to the financial impacts from COVID-19.
- These conclusions are slightly tempered when looking at just 2020 income impacts where we see a small percentage of customers expect higher income in 2020, likely due to the economic stimulus. While some report potentially higher income in 2020, this is not reflected when assessing their overall financial situation.
- Natural gas access was not a driver in these COVID-19 related impacts.

# How has the COVID-19 pandemic impacted your household's financial situation? - Home Ownership



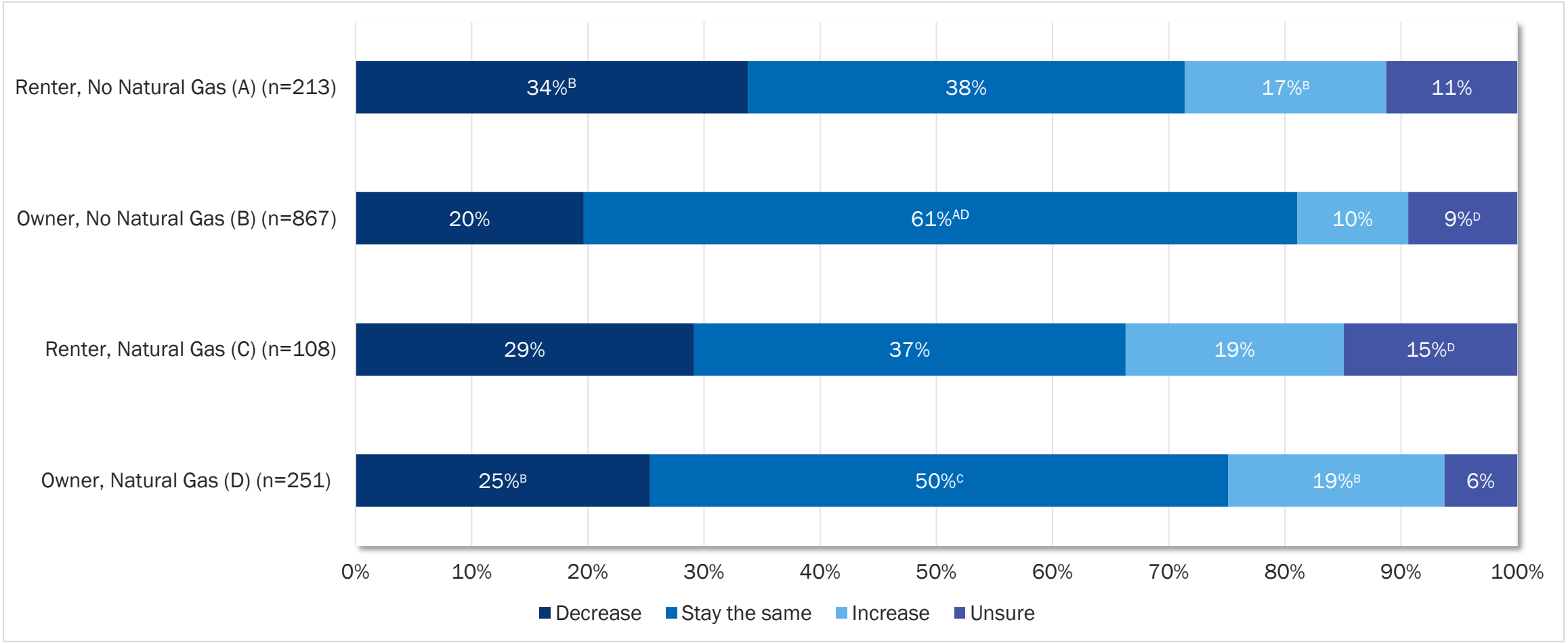

Note: a/b/c/d Indicates significant differences at a 90% confidence level between the following tests: ab,cd,ac,bd

# How has the COVID-19 pandemic impacted your household's financial situation? - CARE Eligibility



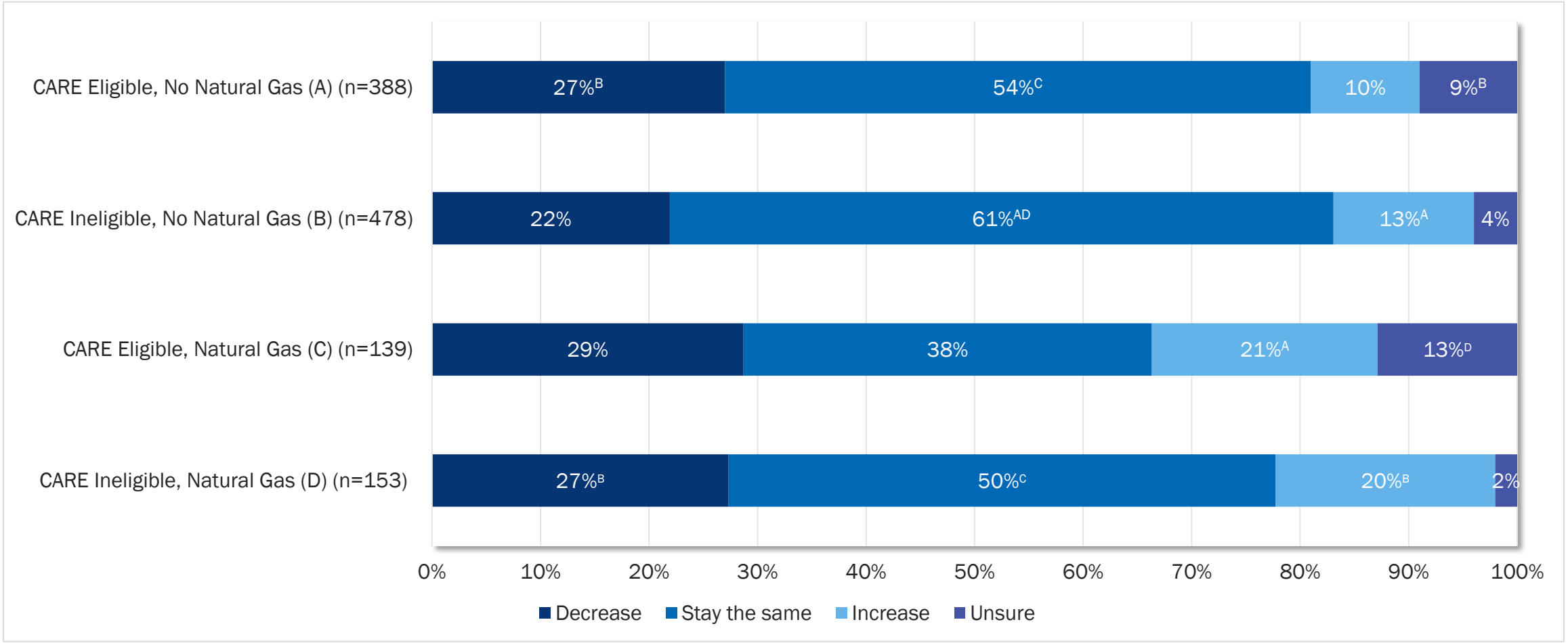

Note: a/b/c/d Indicates significant differences at a 90% confidence level between the following tests: ab,cd,ac,bd

# Do you expect your 2020 income to increase, decrease, or stay about the same? - Home Ownership




Note: a/b/c/d Indicates significant differences at a 90% confidence level between the following tests: ab,cd,ac,bd

# Do you expect your 2020 income to increase, decrease, or stay about the same? - CARE Eligibility




Note: a/b/c/d Indicates significant differences at a 90% confidence level between the following tests: ab,cd,ac,bd

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# QUESTIONS?

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# APPENDIX

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# RESEARCH QUESTIONS

# Data Gathering Research Questions

## The Data Gathering Plan seeks to answer the following research questions:

1. What are the existing types and conditions of the homes and equipment/appliances in the 179 DACs in the San Joaquin Valley?
2. How do residents currently fuel their heating, water heating, clothes drying, and cooking needs? Is there a reason for their current fuel access to other energy sources and if so, what are the constraints? Is their current fuel a preference, and if so, why the preference?
3. What is the energy usage and energy burden of households that rely on alternate fuel sources, such as wood, propane, diesel generators, or other fuels for their heating, water heating, clothes drying, and cooking needs?
4. How does usage and burden differ from comparable households in these communities that do not rely on these alternate fuels?
5. What are key issues or drivers of the burden or hardship customers with alternative fuels (i.e., do not have natural gas or use only electricity) experience?
6. What are residents' attitudes and desires associated with their current fuel uses and potentially different ones (e.g., electricity or natural gas) to supplant use of propane, wood, diesel generators, or other fuels?
7. What factors (e.g., physical home; location; ownership status, attitudes, cultural/lifestyle beliefs) hinder individual households OR communities from replacing propane and wood with electricity or natural gas?
8. What are the total energy costs including the bills for alternate fuel used by customers?
9. How do these costs compare to those who have access to natural gas and electricity?
10. What, if any, benefits, hardships and/or demographic differences exist between customers who use these alternative fuels and those who do not (e.g., health/comfort/safety benefits and sacrifices, usage levels, usage patterns, income, demographic profiles of households, etc.)?
11. Within the SJV DAC's what are key differences or similarities between communities "served by natural gas" and those "minimally or not served by natural gas"?
12. What energy programs or tariffs are already available to the disadvantaged communities that are expected to increase the affordability of energy? To what extent do customers take advantage of these?

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# ENERGY BURDEN BY FUEL USE

# 2019 Energy Costs, Burden, and Economic Hardship by Alternative Fuel Use Categories

| | n* | Total Costs | Energy Burden | Modified Burden | Economic Hardship |
|---|---|---|---|---|---|
| **Fuel Use** | | | | | |
| Natural Gas (a) | 619-1269 | $1,671 | 4.5% | 3.9% | 5.1[df] |
| Non-Natural Gas (b) | 833-1391 | $2,312[a] | 5.9%[a] | 5.3%[a] | 5.0 |
| --All Electric (c) | 207-307 | $1,687 | 5.6%[a] | 4.9%[a] | 5.3[adf] |
| --Propane Only (d) | 475-746 | $2,597[ace] | 5.8%[a] | 5.3%[a] | 4.9 |
| --Wood/Wood Pellet Only (e) | 40-92 | $2,029 | 5.7% | 4.7% | 5.1 |
| --Both Propane and Wood/Wood Pellets (f) | 111-246 | $2,919[acde] | 7.0%[a] | 6.6%[a] | 4.8 |

a/b/c/d/e/f Indicates significant differences at a 90% confidence level between the following tests:

ab,acdef.

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# COVID-19 DETAILED TABLES

# COVID-19 Addition: How has the COVID-19 pandemic impacted your household's financial situation?

| | n | A lot better | A little bit better | About the same | A little bit worse | A lot worse |
|---|---|---|---|---|---|---|
| Overall | 1,439 | 2% | 5% | 52% | 26% | 15% |
| **Fuel Access** | | | | | | |
| Non-Natural Gas (a) | 1,080 | 3% | 5% | 52% | 26% | 15% |
| Natural Gas (b) | 359 | 2% | 4% | 57%[a] | 25% | 13% |
| **Community Size** | | | | | | |
| Small, No Natural Gas (c) | 274 | 0.5% | 4% | 53%[e] | 26% | 16%[d] |
| Medium/Large, No Natural Gas (d) | 806 | 2%[c] | 4% | 58%[f] | 25% | 12% |
| Small, Natural Gas (e) | 70 | 3%[c] | 6% | 43% | 35%[cf] | 12% |
| Medium/Large, Natural Gas (f) | 289 | 2% | 5% | 52%[e] | 25% | 15%[d] |
| **Home Ownership** | | | | | | |
| Owner, No Natural Gas (g) | 867 | 1% | 4% | 63%[hi] | 22% | 9% |
| Renter, No Natural Gas (h) | 213 | 4%[g] | 3% | 32% | 36%[g] | 26%[g] |
| Owner, Natural Gas (i) | 251 | 2% | 5% | 59%[j] | 23% | 11% |
| Renter, Natural Gas (j) | 108 | 5%[i] | 5% | 35% | 31%[i] | 24%[i] |
| **CARE Elegible** | | | | | | |
| CARE Eligible, No Natural Gas (k) | 388 | 2%[m] | 6% | 35% | 36%[l] | 22%[l] |
| CARE Ineligible, No Natural Gas (l) | 478 | 2% | 4% | 66%[kn] | 22% | 7% |
| CARE Eligible, Natural Gas (m) | 139 | 0.0% | 4% | 40% | 30%[n] | 25%[n] |
| CARE Ineligible, Natural Gas (n) | 153 | 5%[lm] | 7% | 58%[m] | 21% | 10% |

Note: a/b/c/d/e/f/g/h/i/j/k/l/m/n Indicates significant differences at a 90% confidence level between the following tests: ab,cd,ce,df,ef,gh,gi,hj,ij,kl,km,ln,mn.

# COVID-19 Addition: Do you expect your 2020 income to increase, decrease, or stay about the same?

| | n | Increase | Decrease | Stay about the same | Unsure |
|---|---|---|---|---|---|
| Overall | 1,439 | 18% | 26% | 46% | 9% |
| **Fuel Access** | | | | | |
| Non-Natural Gas (a) | 1,080 | 11% | 22% | 57%[b] | 10% |
| Natural Gas (b) | 359 | 19%[a] | 26%[a] | 46% | 9% |
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| Renter, No Natural Gas (h) | 213 | 17%[g] | 34%[g] | 38% | 11% |
| Owner, Natural Gas (i) | 251 | 19%[g] | 25%[g] | 50%[j] | 6% |
| Renter, Natural Gas (j) | 108 | 19% | 29% | 37% | 15%[ı] |
| **CARE Elegible** | | | | | |
| CARE Eligible, No Natural Gas (k) | 388 | 10% | 27%[l] | 54%[m] | 9%[l] |
| CARE Ineligible, No Natural Gas (l) | 478 | 13%[k] | 22% | 61%[kn] | 4% |
| CARE Eligible, Natural Gas (m) | 139 | 21%[k] | 29% | 38% | 13%[n] |
| CARE Ineligible, Natural Gas (n) | 153 | 20%[l] | 27%[l] | 50%[m] | 2% |

Note: a/b/c/d/e/f/g/h/i/j/k/l/m/n Indicates significant differences at a 90% confidence level between the following tests: ab,cd,ce,df,ef,gh,gi,hj,ij,kl,km,ln,mn.